IN THE CLAIMS:

Please write the claims to read as follows:

1. (Currently Amended) A system for replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, the system comprising:

a log in the backup memory containing the storage system transaction entries accumulated after a consistency point at which time results of the storage system transaction entries are committed to the disk array;

an initiator process that establishes a swarm of messages with respect to the storage system transaction entries and delivers the swarm to the file system; and

a parallel disk information-retrieval process in the file system that is carried out on the swarm of messages ~~in parallel~~.

2. (Original) The system as set forth in claim 1 wherein each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries in the log, respectively, and a state that indicates whether each of the messages is one of (a) newly transferred to the file system, (b) subject to completion of a LOAD phase thereon by the disk information-retrieval process, (c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system or (d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

3. (Original) The system as set forth in claim 2 wherein the prerequisite event is completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

4. (Original) The system as set forth in claim 3 wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs, respectively.

5. (Original) The system as set forth in claim 4 wherein the initiator is adapted to establish a skip state with respect to skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm.

6. (Original) The system as set forth in claim 4 wherein the file system includes a panic state adapted to alert an operator if a first message received from the initiator in the swarm is a message incapable of being subject to a load phase until a prerequisite event occurs.

7. (Original) The system as set forth in claim 4 wherein the file system includes a panic state adapted to alert an operator if a message retransferred by the initiator process is a message incapable of being subject to a load phase until a prerequisite event occurs.

8. (Original) The system as set forth in claim 1 wherein the backup memory comprises a non-volatile random access memory (NVRAM).

9. (Original) The system as set forth in claim 1 wherein the storage system comprises a network storage appliance.

10. (Currently Amended) A method for replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, the method comprising:

accumulating, in a log in the backup memory, storage system transaction request entries after a consistency point at which time results of the transaction request entries are committed to the disk array;

establishing a swarm of messages with respect to the transaction request entries and delivering the swarm to the file system; and

performing a parallel disk information-retrieval process of the file system on the swarm of messages ~~in parallel~~.

11. (Original) The method as set forth in claim 10 further comprising establishing, for each of the messages of the swarm, a transaction block including a pointer to one of the transaction request entries in the log, respectively, and a state that indicates whether each of the messages is one of (a) newly transferred to the file system, (b) subject to completion of a LOAD phase thereon by the disk information-retrieval process, (c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system or (d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

12. (Original) The method as set forth in claim 11 wherein the prerequisite event is completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

13. (Original) The method as set forth in claim 12 further comprising retransferring each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs, respectively.

14. (Original) The method as set forth in claim 10 wherein the storage system comprises a network storage appliance.

15. (Currently Amended) A computer-readable medium including program instructions executing on a computer for parallelized replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, the program instructions performing the steps of:

accumulating, in a log in the backup memory, storage system transaction request entries after a consistency point at which results of the transaction request entries are committed to the disk array;

establishing a swarm of messages with respect to the transaction request entries and delivering the swarm to the file system; and

performing parallel a disk information-retrieval process of the file system on the swarm of messages ~~in parallel~~.

16. (Original) The computer-readable medium as set forth in claim 15 further comprising establishing, for each of the messages of the swarm, a transaction block including a pointer to one of the transaction request entries in the log, respectively, in the log and a state that indicates whether each of the messages is one of (a) newly transferred to the file system, (b) subject to completion of the LOAD phase thereon by the disk information-retrieval process, (c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system or (d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

17. (Original) The computer-readable medium as set forth in claim 16 wherein the pre-requisite event is completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

18. (Original) The computer-readable medium as set forth in claim 17 further comprising retransferring each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs, respectively.

19. (Original) The computer-readable medium as set forth in claim 15 wherein the storage system comprises a network storage appliance.

20. (Currently Amended) An apparatus for replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, comprising:

a processor to determine a consistency point in time, said apparatus containing at least one transaction entry accumulated after the consistency point, where at the time of the consistency point the transaction entries are committed to the disk array;

a plurality of messages, each message of said plurality of messages being related to a transaction entry of said transaction entries accumulated after the consistency point, said plurality of messages being referred to as a swarm of messages;

an initiator process to deliver the swarm of messages to the file system; and

a parallel disk information-retrieval process that processes the swarm of messages ~~in parallel~~.

21. (Previously Presented) The apparatus as set forth in claim 20, further comprising:

each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries.

22. (Previously Presented) The apparatus as set for in claim 20, further comprising:

a state that indicates whether each of the messages is one of

(a) newly transferred to the file system,

(b) subject to completion of a LOAD phase thereon by the disk information-retrieval process,

(c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system, or

(d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

23. (Previously Presented) The apparatus as set forth in claim 22, further comprising:

the prerequisite event is completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

24. (Previously Presented) The apparatus as set forth in claim 23, further comprising:

the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs, respectively.

25. (Previously Presented) The apparatus as set forth in claim 20, further comprising:

the initiator is adapted to establish a skip state with respect to skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm.

26. (Currently Amended) A method for replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, the method comprising:

accumulating one or more transaction request entries after a consistency point, said consistency point is a time at which results of the transaction request entries are committed to the disk array;

establishing a plurality of messages with respect to the transaction request entries, said plurality of messages being referred to as a swarm of messages and delivering the swarm to the file system; and

executing a parallel disk information-retrieval process on the swarm of messages ~~in parallel~~.

27. (Previously Presented) The method as set forth in claim 26, further comprising:
establishing, for each of the messages of the swarm, a transaction block including a pointer to one of the transaction request entries in the log.

28. (Previously Presented) The method as set forth in claim 20, further comprising:
establishing a state that indicates whether each of the messages is one of
(a) newly transferred to the file system,
(b) subject to completion of a LOAD phase thereon by the disk information-retrieval process,
(c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system, or
(d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

29. (Previously Presented) The method as set forth in claim 28, further comprising:
using as the prerequisite event completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

30. (Previously Presented) The method as set forth in claim 29, further comprising:
retransferring each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs.

31. (Currently Amended) An apparatus for replay of a backup memory in a storage system having a file system for managing transfer of data to and from an attached disk array, comprising:
means for accumulating, a transaction request entry after a consistency point, said consistency point is a time at which results of the transaction request entries are committed to the disk array;

means for establishing a plurality of messages with respect to the transaction request entries, said plurality of messages being referred to as a swarm of messages and delivering the swarm to the file system; and

means for parallel processing of a disk information-retrieval process of the file system on the swarm of messages ~~in parallel~~.

32. (Previously Presented) The apparatus as set forth in claim 31, further comprising:

means for establishing, for each of the messages of the swarm, a transaction block including a pointer to one of the transaction request entries in the log.

33. (Previously Presented) The apparatus as set forth in claim 32, further comprising:

means for establishing a state that indicates whether each of the messages is one of

(a) newly transferred to the file system,

(b) subject to completion of a LOAD phase thereon by the disk information-retrieval process,

(c) subject to completion of a MODIFY phase thereon by a MODIFY process of the file system, or

(d) incapable of being subject to the LOAD phase until a prerequisite event occurs.

34. (Previously Presented) The apparatus as set forth in claim 33, further comprising:

means for using as the prerequisite event completion of the LOAD phase and a MODIFY phase with respect to another of the messages.

35. (Previously Presented) The apparatus as set forth in claim 34, further comprising:

means for retransferring each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the LOAD phase after the prerequisite event occurs.

36. (Previously Presented) A computer readable media, comprising:

said computer readable media having instructions written thereon for execution on a processor for the practice of the method of claim 10 or claim 26.

37. (Previously Presented) Electromagnetic signals propagating on a computer network, comprising:

said electromagnetic signals carrying instructions for execution on a processor for the practice of the method of claim 10 or 26.

38. (Previously Presented) The system of claim 1, further comprising:

a third process that modifies at least some messages in the swarm of messages based on the order in which storage system transaction entries were stored in the log.

39. (Previously Presented) The method of claim 10, further comprising:

modifying at least some messages in the swarm of messages based on the order in which storage system transaction request entries were accumulated in the log.

40. (Previously Presented) The method of claim 26, further comprising:

modifying at least some messages in the swarm of messages based on the order in which transaction request entries were accumulated in the log.

41. (Currently Amended) A file system, comprising:

a backup memory storing a plurality of file system transaction entries;

a first process that establishes a swarm of messages with respect to the file system transaction entries and delivers the swarm of messages to the file system;

a second process that performs a parallel LOAD phase ~~in a concurrent manner~~ for a plurality of messages in the swarm of messages; and

a third process that performs a MODIFY phase for at least some messages in the swarm of messages, the MODIFY phase operating on messages based on the order in which file system transaction entries were stored in the backup memory.

42. (Previously Presented) The file system of claim 41, further comprising:

a fourth process that determines whether a file system transaction entry corresponds to a file system transaction that can be performed right away.

43. (Previously Presented) The file system of claim 42, wherein the fourth process, in response to determining that the file system transaction can not be performed right away, associates the file system transaction entry with a LOAD RETRY state until a prior prerequisite transaction is performed.

44. (Currently Amended) A method, comprising:

storing a plurality of file system transaction entries in a backup memory;

establishing a swarm of messages with respect to the file system transaction entries;

delivering the swarm of messages to a file system;

performing a parallel LOAD phase ~~in a concurrent manner~~ for a plurality of messages in the swarm of messages; and

performing a MODIFY phase for at least some messages in the swarm of messages, the MODIFY phase operating on messages based on the order in which file system transaction entries were stored in the backup memory.

45. (Currently Amended) A system, comprising:

means for storing a plurality of file system transaction entries in a backup memory;

means for establishing a swarm of messages with respect to the file system transaction entries;

means for delivering the swarm of messages to a file system;

means for performing a parallel LOAD phase ~~in a concurrent manner~~ for a plurality of messages in the swarm of messages; and

means for performing a MODIFY phase for at least some messages in the swarm of messages, the MODIFY phase operating on messages based on the order in which file system transaction entries were stored in the backup memory.

Please add new claims 46 *et al.*

46. (New) A method, comprising:

storing a plurality of file system transaction entries in a backup memory;

establishing a swarm of messages with respect to the file system transaction entries;

delivering the swarm of messages to a file system; and

performing a parallel retrieval process for a plurality of messages in the swarm of messages by processing the messages in a somewhat arbitrary order, where the retrieval process is processed by commingling the processing of messages and steps of the retrieval process.